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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/591,920   | 09/07/2006  | Yoshito Tobe         | 3274-060290         | 5381             |
| 28389 7590 07/29/2009<br>THE WEBB LAW FIRM, P.C.<br>700 KOPPERS BUILDING<br>436 SEVENTH AVENUE<br>PITTSBURGH, PA 15219 |             |                      |                     |                  |
| EXAMINER   |             |                      |                     |                  |
| WEISZ, DAVID G   |             |                      |                     |                  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
| 1797   |             |                      |                     |                  |
| MAIL DATE  |             | DELIVERY MODE        |                     |                  |
| 07/20/2009   |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/591,920

**Applicant(s)**

TOBE ET AL.

**Examiner**

DAVID WEISZ

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 March 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-7 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date 7/1/09  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Acknowledgement is made of amendment filed 3/30/09. Upon entering the amendment, claim 1 is amended.
2. The claims 1-7 are pending and presented for the examination.

### *Response to Amendment*

3. In response to the amendment the examiner modifies the grounds for rejection.

### *Claim Rejections - 35 USC § 103*

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. **Claims 1-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Angew. Chem. Int. Ed. 2000, IDS) (Kim) in view of Naemura et al. (Chem. Commun. 1996, IDS) (Naemura).

Kim discloses a fluorescent molecular wire comprising a polymer main chain having a linked conjugated system to which an optically active substituent is linked (*equations 1-3, Page3869/Col1*). However, Kim does not disclose the optically active substituent being represented by formula (I).

Naemura discloses the optically active substituent that is linked to the polymer of formula (III) (*equation 4; Page2749/Col2*). As can be seen in Scheme 3 of the Naemura reference, the crown ether substituent of applicant's formula (III) is linked to the aromatic ring via an azo system, where indeed there is a delocalization of the pi-

electrons (*Scheme 3, Page 2749*). It would have been obvious to one having ordinary skill in the art to link said substituent to any number of aromatic systems, including the polymer chains of Kim (*Claims 1-7*). Additionally, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the optically active substituent of Naemura in the fluorescent molecular wire of Kim because it is an obvious variation of the optically active substituent of Kim, wherein both substituents are capable of sensing chiral compounds or metal ions.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection. However, the Examiner would like to make a couple notes. On pages 8 and 9 of Applicant's arguments, it is stated that the optically active phenolic crown of Naemura does not act as a chemosensor, particularly a chirality sensor. Please refer to the Naemura reference, page 2750, column 1, where the crown molecule bonds to enantiomers for the prediction of chirality. Additionally, Applicant argues that it would not have been obvious to conjugate the phenolic crown of Naemura with the polymer of Kim. Please refer to page 3868, column 2, of the Kim reference, where it is disclosed that an expansive range of conjugated polymers act as a backbone for chemical sensors, thus making it obvious to one having ordinary skill in the art to combine the optically active element with such a polymer.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID WEISZ whose telephone number is (571)270-7073. The examiner can normally be reached on Monday - Thursday, 7:30 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/16/2009

/Yelena G. Gakh/  
Primary Examiner, Art Unit 1797

/D. W./

Examiner, Art Unit 1797